Naval Education and Training Command

NAVEDTRA 82318
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Nonresident Training Course (NRTC)

Aviation Structural Mechanic E 1 & C

Only one answer sheet is included in the NRTC. Reproduce the required number of sheets you need or get answer sheets from your ESO or designated officer.

0503LP2144100

Reviewed and approved for continued use on 27 August 1993.

AVIATION STRUCTURAL MECHANIC E 1 & C

NAVEDTRA 82318

Prepared by the Naval Education and Training Program Management
Support Activity, Pensacola, Florida

Congratulations! By enrolling in this course, you have demonstrated a desire to improve yourself and the Navy. Remember, however, this self-studv course is only one part of the total Navy training program. Practical expedience, schools, selected reading, and your desire to succeed are also necessary to successfully round out a fully meaningful training program. You have taken an important step in self-improvement. Keep up the good work.

HOW TO COMPLETE THIS COURSE SUCCESSFULLY

ERRATA: If an errata comes with this course, make all Indicated changes or corrections before you start any assignment. Do not change or correct the Training Manual (TRAMAN) or assignments in any other way.

TEXTBOOK ASSIGNMENTS: The TRAMAN for this course is Aviation Structural Mechanic E 1&C, NAVEDTRA 12318. The TRAMAN pages that you are to study are listed at the beginning of each assignment. Study these pages carefully before attempting to answer the questions in the course. Pay close attention to tables and illustrations because they contain information that will help you understand the text. Read the learning objectives provided at the beginning of each chapter or topic in the text and/or preceding each set of questions in the course. Learning objectives state what you should be able to do after studying the material. Answering the questions correctly helps you accomplish the objectives.

BLACK DOT INFORMATION: Black dots (●) may be used in the text and correspondence course to emphasize important or supplements 1 information and to highlight instructions for answering certain questions. Read these black dot entries carefully; they will help you answer the questions and understand the material.

SELECTING YOUR ANSWERS: After studying the TRAMAN, you should be ready to answer the questions in the assignment. Read each question carefully, then select the BEST answer. Be sure to select your answer from the subject matter in the TRAMAN. You may refer freely to the TRAMAN and seek advice and information from others on problems that may arise in the course. However, the answers must be the result of your own work and decisions. You are prohibited from referring to or copying the answers of others and from giving answers to anyone else taking the same course. Failure to follow these rules can result in suspension from the course and disciplinary action.

SUBMITTING COMPLETED ANSWER SHEETS: Complete all assignments as quickly as possible to derive maximum benefit from the course. As a minimum, you must submit at least one assignment per month. This is a requirement established by the Chief of Naval Education and Training. Failure to meet this requirement could result in disenrollment from the course.

TYPES OF ANSWER SHEETS: If you are a U.S. Navy enlisted member on active duty or a drilling U.S. Naval Reserve enlisted member, you should use the answer sheet attached at the end of this course and follow the instructions in section A below. If you are an enlisted U.S. Naval Reserve member who is not attached to a drilling unit or if you are an officer, a civilian, or a member of the U.S. Army, Air Force, Marine Corps, or Coast Guard, you should use the Automatic Data Processing (ADP) answer sheets included in the course package and follow the instructions in section B.

A. Manually Scored Answer Sheets

If you are a U.S. Navy enlisted member on active duty or attached to a U.S. Naval Reserve drilling unit, your course will be administered by your local command. You must use the answer sheet designed for manual scoring, NETPMSA form 1430/5, Stock Ordering Number 0502-LP-216-0100. You may get a supply of the forms from your Educational Services Officer (ESO), or you may reproduce the one in the back of this course booklet. DO NOT USE THIS FORM FOR COURSES ADMINISTERED BY NETPMSA.

Recording Information on the Manually Scored Answer Sheets: As you complete each assignment, submit the completed answer sheet to your ESO for grading. You may submit more than one answer sheet at a time. Remember, you must submit at least one assignment each month.

Grading: Your ESO will grade each answer sheet and notify you of any incorrect answers. The passing score for each assignment is 3.2. If you receive less than 3.2 on any assignment, the ESO will list the questions you answered incorrectly and give you a answer sheet marked "RESUBMIT." You must redo the assignment and complete the RESUBMIT answer sheet. The maximum score you can receive for a resubmitted assignment is 3.2.

Course Completion: After you have submitted all the answer sheets and have earned at least 3.2 on each assignment, your command should give you credit for this course by making the appropriate entry in your service record.

Student Questions: If you have questions concerning the administration of this course, consult your ESO.

B. ADP Answer Sheets

If you are an enlisted U.S. Naval Reserve member who is not attached to a drilling reserve unit or if you are an officer, a civilian, or a member of the U.S. Army, Air Force, Marine Corps, or Coast Guard, use the ADP answer sheets provided in your course package. You should use one blank original ADP answer sheet for each assignment. Use only the original ADP answer sheet provided in your course package; NETPMSA will not accept reproductions.

Recording Information on the ADP Answer Sheets: Follow the "MARKING INSTRUCTIONS" on each answer sheet. Be sure that blocks 1, 2, and 3 are filled in correctly. This information is necessary for your course to be properly processed and for you to receive credit for your work.

As you work the course, be sure to mark your answers in the course booklet because your answer sheets will not be returned to you. When you have completed an assignment, transfer your answer from the course booklet to the answer sheet.

Mailing the Completed ADP Answer Sheets: Upon completing an assignment, mail the completed answer sheet to:

COMMANDING OFFICER
NETPMSA CODE 074
6490 SAUFLEY FIELD RD
PENSACOLA FL 32559-5000

Use envelopes to mail your answer sheets. You must provide your own envelopes or request them from your ESO. You may enclose more than one answer sheet in a single envelope. Remember, regardless of how many answer sheets you submit at a time, NETPMSA should receive at least one assignment a month.

NOTE: DO NOT USE THE COURSE COMMENTS PAGE AS AN ENVELOPE FOR RETURNING ANSWER SHEETS OR OTHER COURSE MATERIALS.

Grading: NETPMSA will grade the answer sheets and notify you by letter concerning your grade for each assignment, your incorrect answers, and your final grade. The passing score for each assignment is 3.2. If you receive less than 3.2 on any assignment, you must rework the assignment. NETPMSA will enclose a new ADP answer sheet in the letter notifying you of the questions you answered incorrectly. You will be required to redo the assignment and resubmit the new answer sheet. The

maximum score you can receive for a resubmitted assignment is 3.2.

Course Completion: When you complete the last assignment, fill out the "Course Completion" form in the back of the course and enclose it with your last answer sheet. NETPMSA will issue you a letter certifying that you satisfactorily completed the course. You should make sure that credit for the course is recorded in your service record. YOU MAY RETAIN THE TEXT.

NOTE: YOUR OFFICIAL COURSE COMPLETION DATE WILL BE THE DATE YOUR LAST ASSIGNMENT IS PROCESSED THROUGH THE NETPMSAADP SYSTEM--NOT THE DATE YOU DEPOSIT THE LAST ASSIGNMENT IN THE MAIL. This is especially important if you are taking the course for Naval Reserve retirement credit. You must mail your answer sheets at least 60 days before your anniversary date. This will provide you with enough time for delays in the mail or reworking failed assignments. DO NOT MAIL YOUR ASSIGNMENTS TO THE NAVAL RESERVE PERSONNEL COMMAND (NRPC).

Student Questions: Refer questions concerning this course to NETPMSA by mail (use the address on page ii) or by telephone: DSN 922-1366 or commercial (904) 452-1366.

NAVAL RESERVE RETIREMENT CREDIT

If you are a member of the Naval Reserve, you will receive retirement points if you are authorized to receive them under current directives governing retirement of Naval Reserve personnel. For the purpose of Naval Reserve retirement, this edition of the course is evaluated at 6 points. These points will be credited to you upon your satisfactory completion of the entire course.

NOTE: YOUR OFFICIAL COURSE COMPLETION DATE WILL BE THE DATE YOUR LAST ASSIGNMENT IS PROCESSED THROUGH THE NETPMSA ADP SYSTEM--NOT THE DATE YOU DEPOSIT THE LAST ASSIGNMENT IN THE MAIL. Refer to the Course Completion paragraph under section B. ADP Answer Sheets.

COURSE OBJECTIVES

By completing this course, you will demonstrate a knowledge of the following subject matter: management safety and supervision; electrically operated canopy systems; utility systems; air-conditioning systems; and the Navy aircrew common ejection seat (NACES).

Naval courses may include several types of questions—multiple-choice, true-false, matching, etc. The questions are not grouped by type but by subject matter. They are presented in the same general sequence as the textbook material upon which they are based. This presentation is designed to preserve continuity of thought, permitting step-by-step development of ideas. Not all courses use all of the types of questions available. The student can readily identify the type of each question, and the action required, by inspection of the samples given below.

MULTIPLE-CHOICE QUESTIONS

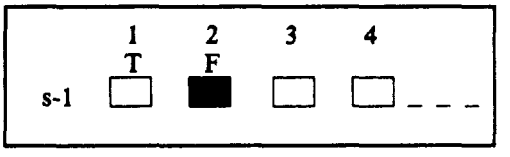
Each question contains several alternatives, one of which provides the best answer to the question. Select the best alternative, and blacken the appropriate box on the answer sheet.

SAMPLE

s-1. Who was the first person appointed Secretary of Defense under the National Security Act of 1947?

1. George Marshall
2. James Forrestal
3. Chester Nimitz
4. William Halsey

Indicate in this way on the answer sheet:



TRUE-FALSE QUESTIONS

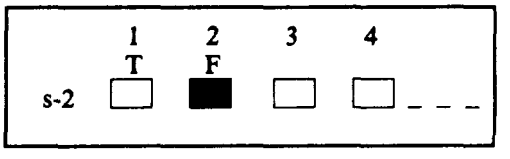
Mark each statement true or false as indicated below. If any part of the statement is false the statement is to be considered false. Make the decision, and blacken the appropriate box on the answer sheet.

SAMPLE

s-2. All naval officers are authorized to correspond officially with any systems command of the Department of the Navy without their respective commanding officer's endorsement.

1. True
2. False

Indicate in this way on the answer sheet:



MATCHING QUESTIONS

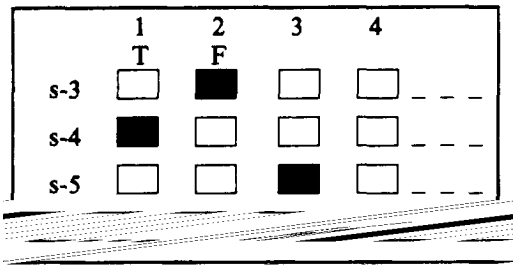
Each set of questions consists of two columns, each listing words, phrases or sentences. The task is to select the item in column B which is the best match for the item in column A that is being considered. Items in column B maybe used once, more than once, or not at all. Specific instructions are given with each set of questions. Select the numbers identifying the answers and blacken the appropriate boxes on the answer sheet.

SAMPLE

In questions s-3 through s-6, match the name of the shipboard officer in column A by selecting from column B the name of the department in which the officer functions. Some responses may be used once, more than once, or not at all.

A. OFFICER	B. DEPARTMENT
s-3. Damage Control Assistant	1. Operations Department
s-4. CIC Officer	2. Engineering Department
s-5. Disbursing Officer	3. Supply Department
s-6. Communications Officer	

Indicate in this way on the answer sheet:



ASSIGNMENT 1

Textbook Assignment: "Management Safety and Supervision," chapter 1, pages 1-1 through 1-13.

1-1. What manual contains Navy enlisted manpower and personnel classifications and occupational standards?

1. NAVPERS 18086
2. NAVPERS 18084-1
3. NAVPERS l8068
4. NAVPERS 18068-1

1-2. Because of the inherent dangers associated with duties, senior AME personnel should be concerned with which of the following safety factors?

1. Personnel safety
2. Equipment safety
3. Both l and 2 above
4. Shop/flight line safety

1-3. The absence of which of the following factors accounts for most accidents with and around safety and survival equipment?

1. Supervision and leadership only
2. Education and training only
3. Supervision and training only
4. Training, supervision, and leadership

1-4. Who has the basic responsibility to promote and adhere to safety rules and regulations?

1. The safety petty officer
2. The individual
3. The work center supervisor
4. The commanding officer

1-5. It is only necessary to provide safeguards, safety will take care of itself.

1. True
2. False

1-6. What does the term safety mean as discussed in this course?

1. Freedom from injury
2. Freedom from danger
3. Providing protection
4. Freedom from risk

1-7. What is the objective of the work environment?

1. To operate with maximum efficiency and safety
2. To operate with minimum efficiency and waste
3. To operate freely from interruption and difficulty
4. To eliminate hazards and provide safeguards

1-8. Which of the following is an objective of supervision?

1. To operate with minimum efficiency and waste
2. To operate free from interruption and difficulty
3. To operate with maximum efficiency and safety
4. Each of the above

1-9. To establish a good safety record requires a good safety program.

1. True
2. False

1-10. Ninety-eight percent of all accidents can be prevented. The remaining 2 percent are caused by what factor?

1. Faulty equipment
2. Poor supervision
3. Natural elements
4. Lack of communication

1-11. How is enforcement defined as it applies to safety?

1. Reprimanding violators
2. Monitoring a continuous safety program
3. Formulating rules and regulations and a safety policy

1-12. Supervisors must enforce safety rules without fear or favor.

1. True
2. False

1-13. When determining the requirements for forward or advance base operations, you must consider what factors?

1. Safety, mission, and environment only
2. Operating factors and facilities only
3. Safety and mission only
4. Safety, mission, environment, operating factors, and facilities

1-14. According to its primary function, a functional component is formed from what total number of major groups?

1. 10
2. 11
3. 12
4. 13

1-15. Which of the following items is one of 300 standardized Navy units used to build and operate advanced bases?

1. Expenditure
2. Functional
3. Planning
4. Logistic

1-16. What is the major group designation for aviation?

1. H
2. I
3. J
4. K

1-17. What factors are included on the list of requirements for the performance of a specific task at an advance base?

1. A combination of material and equipment only
2. A combination of equipment and personnel only
3. A combination of equipment, material, and/or personnel
4. A combination of equipment, supplies, and repair parts

1-18. Other necessary repair parts, supplies, and equipment may be determined from the outfitting list for what activity or action?

1. The type aircraft and mission to be supported
2. The mission and weapon system to be supported
3. The type aircraft and weapon system to be supported
4. All of the above

1-19. What section of the Advanced Base and Initial Outfitting List provides complete information and data requirements?

1. Abridged and supply
2. Index
3. Outfitting and support
4. Abridged and detailed outfitting for functional components

1-20. What instruction is used to implement the NAVOSH program ashore?

1. OPNAVINST 4790.2E, Vol. IV
2. OPNAVINST 5100.19B, Vol. I
3. OPNAVINST 5100.19B, Vol. II
4. OPNAVINST 5100,23B, Vol. III

1-21. An AME must deal with what three major hazardous substances?

1. CADs, LOX, rocket motors
2. CADs, nitrogen, hot bleed air
3. High-pressure air, CADs, LOX
4. High-pressure air, LOX, gaseous oxygen

1-22. What are the two states of aviators breathing oxygen?

1. Type I Liquid, Type II Gaseous
2. Type I Gaseous, Type II Gaseous
3. Type I Liquid, Type II Liquid
4. Type I Gaseous, Type II Liquid

1-23. What publication should be used to follow established safety procedures for the handling of LOX?

1. NAVAIR 06-03-501
2. NAVAIR 06-30-501
3. NAVAIR 06-03-509
4. NAVAIR 06-30-509

1-24. At atmospheric pressure, oxygen exists as a solid at what temperature below its melting point?

1. -297°F
2. -297°C
3. -361°C
4. -361°F

1-25. Which of the following type designators is classed as liquid oxygen?

1. I
2. II
3. III
4. IV

1-26. What is the critical temperature of gaseous oxygen?

1. -119°C
2. -l83°c
3. -297°C
4. -281°C

1-27. Gaseous oxygen will turn into a liquid at atmospheric pressure by raising the temperature above -297°F.

1. True
2. False

1-28. What is the critical pressure required to liquify oxygen?

1. 736 psia
2. 736 psig
3. 736.5 psia
4. 736.3 psig

1-29. Gaseous oxygen will condense to a liquid under which, if any, of the following conditions?

1. Temperatures above it's critical temperature
2. Atmospheric pressure
3. Pressure above it's critical pressure
4. None of the above

1-30. What are the physical characteristics of gaseous oxygen?

1. Odorless, tasteless, colorless
2. Pale blue fluid that flows like water
3. 1.5 times heavier than air
4. None of the above

1-31. How much heavier is 1 gallon of liquid oxygen than 1 gallon of water?

1. 1.10 lb
2. 1.12 lb
3. 1.13 lb
4. 1.14 lb

1-32. What is the total weight of 1 gallon of liquid oxygen?

1. 9.159 lb
2. 9.519 lb
3. 9.5 lb
4. 9.1 lb

1-33. What are the two most important factors a supervisor looks for in an individual before assigning him/her duties and responsibilities of handling LOX?

1. An understanding of safety and LOX cart operation
2. A current LOX license and knowledge of LOX cart operation
3. Consciousness, safety, and first aid ability
4. An understanding of safety and a history of reliable performance

1-34. How often should an aircraft LOX converter system be sampled and tested?

1. Every 210 days
2. Every 30 days
3. As soon as possible after a report of in-flight odors by aircrew personnel
4. When the AME suspects the system doesn't smell right

1-35. What contaminants must be prevented from entering a LOX system during the handling and transfer process?

1. Water
2. FOD
3. Oil
4. Atmospheric gases

1-36. Reports concerning LOX contamination will be submitted in accordance with what OPNAVINST?

1. 3750.6
2. 4790.2
3. 5100.19
4. 8023.1

1-37. Under which of the following conditions must a LOX converter or oxygen system be purged?

1. If the system is left open to the atmosphere
2. Whenever contamination is suspected
3. When empty
4. All of the above

1-38. An aircraft oxygen system or LOX converter must be purged in accordance with what publications?

1. OPNNAVINST 4790.2 and the MIMs
2. OPNAVINST 3750.6 and the MIMs
3. NAVAIR 01-LOX-6.4 and the MIMs
4. NAVAIR 01-13-1-6.4 and/or the MIMs

1-39. What type of test is used for station monitoring of aviators gaseous breathing oxygen?

1. Liquid sample
2. Cryogenic
3. MICRO contamination
4. Sniff-odor

1-40. The on-station procurement of aviators gaseous breathing oxygen must meet the requirements of what publication?

1. OPNAVINST 4790.2
2. OPNAVINST 5100.19
3. NAVAIR 13-1-6.4
4. MIL-0-27210

1-41. What publication will be used in the performance of sample testing of gaseous oxygen?

1. MIL-0-27210
2. A6-332AO-QYD-000
3. NAVAIR 13-1-6.4
4. NAVAIR 06-30-501

1-42. Cylinders used for aviators gaseous breathing oxygen that are found with open valves and/or a positive internal pressure of less than 25 psig should be tagged with what information?

1. Empty
2. Needs filling
3. Dry before filling
4. Needs purging

1-43. Which of the following is a method for providing high-pressure compressed air?

1. Portable cylinder
2. Pump station air compressor
3. Cascade-type cylinder
4. Each of the above

1-44. A malfunctioning pressure regulator should be disconnected from the line by what method?

1. Removing the line
2. Removing the regulator
3. Closing the associated shut-off valve
4. Closing the associated bottle by turning the bottle valve

1-45. Under which, if any, of the following circumstances, may an unmarked or unidentified cartridge be installed in an ejection seat?

1. When directed by the commanding officer
2. When directed by the maintenance officer
3. Only in emergency situations
4. None of the above

1-46. When must newly assigned personnel receive an ejection seat check-out?

1. Within 60 days of reporting
2. Within 90 days of reporting
3. Within 180 days of reporting
4. Prior to performing any maintenance tasks

1-47. Each AME must receive a seat check-out a minimum of how often?

1. Once per assignment
2. Once every 6 months
3. Once every 9 months
4. Once a year

1-48. What information must be listed on an individual's records for having received a seat check-out?

1. Date due, date given, signature of individual
2. Date due, date given, signature of supervisor
3. Date due, date given, signature of AME supervisor
4. Date due, date qiven, signature of AME giving check-out

A. Description, Preparation for Use, and Handling Instructions, Aircrew Escape Propulsion System (AEPS) Devices
B. General Use Cartridges and Cartridge Actuated Devices for Aircraft and Associated Equipment
C. Ammunition Afloat
D. Ammunition and Explosives Ashore

Figure 1.--Ordnance Publications

IN ANSWERING QUESTIONS 1-49 THROUQH 1-52, SELECT THE PUBLICATION TITLE FROM FIGURE 1 THAT RELATES TO THE PUBLICATION NUMBER USED AS THE QUESTION. USE EACH TITLE ONLY ONCE.

1-49. NAVAIR 11-85-1.

1. A
2. B
3. C
4. D

1-50. OP 4.

1. A
2. B
3. C
4. D

1-51. OP 5.

1. A
2. B
3. C
4. D

1-52. NAVAIR 11-100-1.

1. A
2. B
3. C
4. D

1-53. The specific period of time that a CAD is allowed to be used is known as its

1. shelf life
2. service life
3. installed life
4. removed life

1-54. What date must be checked prior to installing a CAD into any system?

1. Open
2. Expiration
3. Installed
4. Manufacture

1-55. To determine the service-life expiration date of a CAD, what date(s) must be computed?

1. Aircraft life
2. Shelf life
3. Installed life
4. Both 2 and 3 above

1-56. If the date of manufacture of a CAD is 0981 and the shelf life is 6 years, what is the shelf-life expiration date?

1. 0985
2. 0986
3. 0987
4. 0988

1-57. To which of the following manuals should you refer to determine the installed-life expiration date of a CAD?

1. NAVAIR 11-100-1
2. NAVAIR 11-85-1
3. OP 4
4. OP 5

1-58. To determine the installed-life expiration date, the installed-life date is added to the date what action was performed on the container?

1. Opened
2. Received from supply
3. Received from the manufacturer
4. Sealed by the manufacturer

1-59. If the installed life is 66 months, what is the installed-life expiration date of a CAD whose container was opened during 1183?

1. 0588
2. 0688
3. 0589
4. 0689

1-60. A hermetically sealed container was opened on 15 March. Which of the following dates is used to compute the expiration date?

1. 1 January
2. 1 March
3. 15 March
4. 31 March

1-61. Which of the following is an approved method for marking expiration dates on CADs?

1. Paint
2. Scribe
3. Permanent ink
4. Electroetch

1-62. Which of the following dates must be marked on a CAD that is being installed in an aircraft?

1. Installed
2. Shelf-life
3. Container opened
4. Installed-life

1-63. A logbook entry for a CAD must be made when which of the following events occurs?

1. Actuation
2. Replacement
3. Reinstallation
4. Refurbishment

1-64. A contingency service-life extension for a CAD granted by the commanding officer may not exceed what maximum number of days?

1. 15
2. 30
3. 45
4. 60

1-65. For an additional service-life extension beyond the contingency extension, a message reply will be received from which of the following activities?

1. NAVORDSTA
2. NAVAIRLANT
3. NAVAIRSYSCOM
4. NAVORDSYSCOM

1-66. A change to NAVAIR 11-100-1 may change the permanent service life of CADs. Which of the following methods is used to change NAVAIR 11-100-1?

1. Rapid action change
2. Interim rapid action change
3. Formal change
4. Each of the above

1-67. What associated attachment determines the service life of wire-braid, Teflon®-lined hoses?

1. The initiator to which it is attached
2. The aircraft in which it is installed
3. The CAD to which it leads
4. The rocket motor to which it leads

1-68. When should the hoses in an escape system be inspected?

1. At every phased inspection
2. Upon removal of the seat
3. After the hoses are disconnected
4. All of the above

1-69. For safety reasons, which of the following devices will be installed in CADs when they are removed from the aircraft?

1. Caps
2. Plugs
3. Safety pins
4. All of the above

1-70. What OPNAVINST provides the guidelines for reporting ordnance malfunctions, discrepancies, and accidents?

1. 8023.3
2. 5100.19
3. 4790.2
4. 3750.6

1-71. What OPNAV form is used in the aircraft logbook/AESR for recording all explosive safety devices?

1. 4790/21A
2. 4790/25A
3. 4790/26A
4. 4790/26B

1 -72. The best assurance of personnel safety lies in the safety education of the people themselves.

1. True
2. False

ASSIGNMENT 2

Textbook assiqnment 1: "Electrically Operated Canopy System," chapter 2, pages 2-1 through 2-13.

2-1. What function does the canopy serve on the F/A-l8C?

1. Protection from the elements
2. Entry and exit for the cockpit
3. Both 1 and 2 above
4. A means for total visibility

2-2. The F/A-l8C canopy is normally operated in which of the following modes?

1. Pneumatic
2. Hydraulic
3. Electrical
4. Manual

2-3. Under normal conditions, the canopy is controlled by which of the following devices?

1. Internal canopy control switch
2. External canopy control switch
3. Both 1 and 2 above
4. Manual canopy control handle

2-4. When the canopy actuation control system has failed, what method will be used to open and close the canopy?

1. Manual back-up mode
2. External electrical power
3. Internal electrical power
4. Utility battery power

2-5. Which of the following components is mounted on the canopy?

1. Canopy unlatch thruster
2. Canopy contactor
3. Canopy actuator
4. Canopy actuation link

2-6. The canopy actuator, used to open and close the canopy, is protected by a thermal device that senses an overheat condition.

1. True
2. False

2-7. What total number of manual methods are available to open and close the canopy?

1. One
2. Two
3. Three
4. Four

2-8. What total number of canopy control switches are provided for normal electrical operation of the canopy?

1. One
2. Two
3. Three
4. Four

2-9. What canopy contactor supplies power to the close windings of the canopy actuator motor?

1. Up
2. Down
3. Open
4. Close

2-10. In what canopy latch retainer is the canopy position switch mounted?

1. Number 1
2. Number 2
3. Number 3
4. Number 4

2-11. What switch(es) must be depressed to extinguish the master caution light?

1. Canopy position switch
2. Canopy locked switch
3. Both 1 and 2 above
4. Canopy caution switch

2-12. How much power does the F/A-18 aircraft electrical system supply for canopy operation?

1. 24 volts ac
2. 24 volts dc
3. 28 volts dc
4. 28 volts ac

2-13. The air-cycle air-conditioning system supplies cold air for the inflation of the canopy pressure seal.

1. True
2. False

2-14. Both canopy switch plungers must be depressed within what maximum number of seconds?

1. 5
2. 10
3. 15
4. 20

2-15. If you use the internal manual canopy handle, what maximum number of turns may be required to close the canopy?

1. 70±1
2. 75±1
3. 80±1
4. 85±1

2-16. What component transfers the mechanical motion of the manual drive unit to the canopy actuator?

1. Handle assembly
2. Actuator arm
3. Shaft assembly
4. Torque limiter

2-17. What maximum number of turns may be required to externally operate the canopy actuator manual drive unit?

1. 5±1
2. l5±1
3. 25±1
4. 35±1

2-18. What component prevents damage to the actuator if excessive force is applied in the manual back-up control mode?

1. Handle assembly
2. Actuator arm
3. Shaft assembly
4. Torque limiter

2-19. Which of the following handles will cause the canopy to be jettisoned?

1. Internal jettison
2. External jettison
3. Ejection control
4. Each of the above

2-20. What device(s) prevents the backflow of an SMDC detonation from reaching the seat components?

1. Emergency escape disconnect
2. One-way transfer valve
3. SMDC initiator
4. Both 2 and 3 above

2-21. What component provides the ballistic gas that fires the canopy jettison rocket motor?

1. Canopy jettison SMDC initiator
2. Emergency escape disconnect
3. Canopy unlatch thruster
4. Canopy jettison FCDC initiator

2-22. What component provides the vertical thrust needed to separate the canopy from the aircraft?

1. Canopy actuator
2. Rocket motor
3. Unlatch thruster
4. SMDC initiator

2-23. Which of the following devices is used to protect SMDCs?

1. Metallic sheath
2. Braid overwrap
3. Stainless steel tubing
4. Aluminum tubing

2-24. What is the approximate length of the external jettison initiator cable?

1. 6 feet
2. 8 feet
3. 10 feet
4. 12 feet

2-25. What device prevents the internal jettison handle from being squeezed and pulled?

1. Shear pin
2. Safety pin
3. Shear wire

2-26. The rocket motor initiators convert ballistic-gas pressure to what force?

1. Explosive canopy thrust
2. Explosive stimulus
3. Explosive energy
4. Mechanical energy

2-27. What total number of SMDC initiators are in the F-18C canopy jettison system?

1. One
2. Two
3. Three
4. Four

2-28. How many methods are available to jettison the canopy on the F-18C aircraft?

1. One
2. Two
3. Three
4. Four

2-29. On the F-18 aircraft, how much time must elapse+before the thermal protection device will reset after sensing an overheat condition?

1. 15 seconds
2. 39 seconds
3. 60 seconds
4. 90 seconds

IN ANSWERING QUESTIONS 2-30 THROUGH 2-35, REFER TO THE CANOPY JETTISON SYSTEM SCHEMATIC AT FIG. 2-12 IN THE TEXT. SELECT FROM COLUMN B THE CORRECT MEANING OF THE SYMBOLS IN COLUMN A.

COLUMN A		COLUMN B
2-30.		1. Shielded mild detonating cord
	1. 5 2. 6 3. 7 4. Both 6 and 7	2. Flexible confined detonating cord
2-31.	------	3. Ballistic gas
	1. 5 2. 2 3. 3 4. 4	4. Structural pivot point
2-32.		5. Mechanical linkage
	1. 1 2. 2 3. 3 4. 4	6. Ejection seat
2-33.		7. Emergency escape sequencing system
	1. 7 2. 6 3. 5 4. 4	
2-34.		
	1. 1 2. 2 3. 3 4. 4	

IN ANSWERING QUESTION 2-35, REFER TO THE CANOPY JETTISON SYSTEM SCHEMATIC AT FIG. 2-12 IN THE TEXT. SELECT FROM COLUMN B THE CORRECT MEANING OF THE SYMBOL IN COLUMN A.

COLUMN A		COLUMN B
2-35.		1. Shielded mild detonating cord
	1. 2 2. 3 3. 5 4. 4	2. Flexible confined detonating cord
		3. Ballistic gas
		4. Structural pivot point
		5. Mechanical linkage
		6. Ejection seat
		7. Emergency escape sequencing system

2-36. What component(s) act(s) as a solid link during normal canopy operation?

1. Canopy actuation connecting link
2. Canopy actuator
3. Both 1 and 2 above
4. Canopy unlatch thruster

2-37. What maintenance code is displayed on the nosewheel well DDI in the event the canopy switches disagree?

1. 888
2. 889
3. 890
4. 898

2-38. The electrical inputs supplied to the canopy actuator are transformed into what type energy?

1. Electrical
2. Direct power source
3. Mechanical motion
4. Logic circuit power

IN ANSWERING QUESTIONS 2-39 THROUGH 2-42, REFER TO FIGURE 2-9 IN THE TEXT.

2-39. The canopy system will be removed from the battery circuit when battery voltage drops below

1. 19 Vac
2. 19±1 Vac
3. 19 Vdc
4. 19±1 Vdc

2-40. When is the left main landing gear WOW relay #2 energized?

1. With weight on wheels
2. With external power applied
3. With weight off wheels
4. With battery power applied

2-41. From what circuit breaker/relay panel does the canopy control receive its power?

1. 6
2. 2
3. 8
4. 4

2-42. What component houses the thermal protection device?

1. Canopy control switch
2. Canopy actuator
3. #3 relay panel
4. #8 relay panel

IN ANSWERING QUESTIONS 2-43 THROUGH 2-49, REFER TO FIGURE 2A, BELOW, AND FIGURE 2-9 IN THE TEXT. MATCH THE COMPONENT NAME IN THE QUESTION WITH THE ALPHABETIC INDICATOR IN FIGURE 2A.

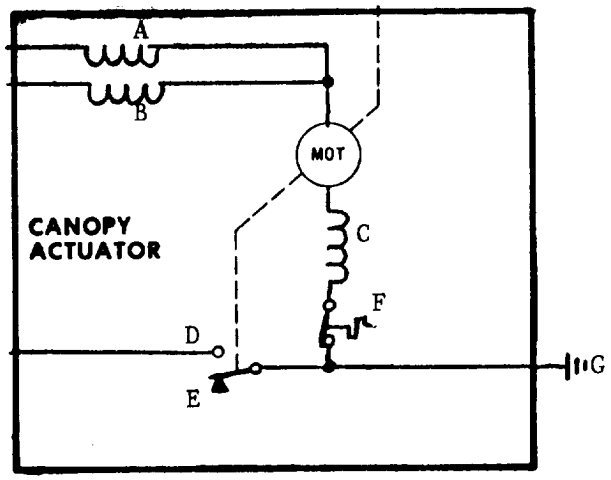


Figure 2A.--Canopy Actuator

2-43. Canopy up limit switch--up contact.

1. B
2. C
3. D
4. E

2-44. Canopy actuator electrical ground.

1. A
2. C
3. E
4. G

2-45. Canopy actuator field windings--open.

1. A
2. B
3. C
4. F

2-46. Canopy actuator brake winding.

1. D
2. C
3. B
4. A

2-47. Canopy actuator thermal protection device.

1. D
2. E
3. F
4. G

2-48. Canopy up-travel-limit switch--not up contact.

1. B
2. C
3. D
4. E

2-49. Canopy actuator field windings--close.

1. A
2. B
3. C
4. G

2-50. How many systems and components are related to the electrical canopy system?

1. Seven
2. Nine
3. Three
4. Four

2-51. Unlike the external canopy control switch, the internal canopy control switch has only two positions, open and close.

1. True
2. False

IN ANSWERING QUESTION 2-52, REFER TO FIGURE 12-9 IN THE TEXT.

2-52. Which of the following switches is/are a double pole double throw switch(es)?

1. Canopy position switch
2. Internal canopy control switch
3. External canopy control switch
4. Both 2 and 3 above

2-53. Explosive stimulus produced by the initiator is transferred through the SMDC to what component?

1. Canopy unlatch thruster
2. Emergency escape disconnect
3. Flexible confined detonating cord
4. Rocket motors

2-54. What component prevents explosive stimulus from continuing toward the ejection seat components during internal canopy jettison?

1. FCDC
2. Canopy unlatch thruster
3. Emergency escape disconnect
4. One way transfer valve

2-55. What action does each rocket motor produce to separate the canopy from the aircraft?

1. Thrust aft and up
2. Sufficient burn time
3. Vertical thrust
4. Horizontal thrust

2-56. During canopy jettison, the thruster unlocks internally and forces the canopy aft to disengage the canopy latches.

1. True
2. False

IN ANSWERING QUESTIONS 2-57 THROUGH 2-60, REFER TO FIGURE 2-9 IN THE TEXT. IDENTIFY THE TYPE SWITCHES USED IN THE ELECTRICAL CANOPY SYSTEM.

2-57. Canopy locked switch.

1. Single pole double throw momentary contacts
2. Single pole double throw
3. Double pole double throw momentary contacts
4. Double pole double throw

2-58. External canopy control switch.

1. Double pole double throw
2. Single pole three position
3. Double pole double throw momentary on
4. Single pole double throw three position

2-59. Canopy up contactor.

1. Single contact
2. Momentary on
3. Double contact
4. None of the above

2-60. Holding coil.

1. Single pole double throw normal or momentary contacts
2. Single pole double throw
3. Single pole single throw
4. Single pole single throw normal or momentary contacts on

ASSIGNMENT 3

Textbook Assignment: "Utility Systems," chapter 3, page 3-1 through 3-10 and "Air-Conditioning Systems," chapter 4, pages 4-1 through 4-19.

3-l. Which of the following systems is used to prevent ice from forming on an aircraft?

1. Anti-ice
2. Deice
3. Rain-removal
4. Defrost

3-2. The P-3 aircraft uses what source of heat for its deicing system?

1. Electrical energy
2. Bleed air
3. Hydraulic pumps
4. Solar energy

3-3. What total number of bleed-air shutoff valves are on the P-3 aircraft?

1. Five
2. Six
3. Three
4. Four

3-4. By what method are the deicing system modulating valves controlled?

1. Pneumatic
2. Hydraulic
3. Electric
4. Thermostatic

3-5 . What component causes the modulating valve to close when the pressure is reduced on the modulating valve diaphragm?

1. Spring
2. Solenoid
3. Sensor
4. Spoon

3-6. Which of the following conditions will cause high temperature within the leading edge of the wing?

1. Solar radiation
2. Bleed-air leakage
3. Malfunctioning modulating valve
4. Both 2 and 3 above

3-7. The fusalage bleed-air shutoff valves are normally open during deicing operations.

1. True
2. False

3-8. To perform a deicing leak test, the manifold pressure must reach what minimum psi reading?

1. 40
2. 55
3. 70
4. 85

3-9. What should be the maximum number of seconds required for the accept light to Illuminate during a leak test?

1. 8
2. 12
3. 15
4. 20

3-10. The P-3C wing deice system uses bleed-air from what stage(s) of the engine compressor?

1. 12th
2. 13th
3. 14th
4. Both 2 and 3 above

3-11. Where is the wing leading edge pneumatic thermostat located?

1. Wing leading edge tips
2. Adjacent to each modulating valve
3. Adjacent to shut-off valve
4. Wing leading edge ducting

3-12. What component allows pressure from the modulating valve diaphragm to vent?

1. Leading edge temperature and overheat circuit
2. Overheat thermal switch
3. Fuselage bleed-air shutoff valve
4. Wing leading edge thermostat

3-13. At what temperature will the leading edge caution hot light illuminate?

1. 210°F
2. 220°F
3. 230°F
4. 240°F

3-14. The ducting overheat switches are explosiveproof, thermally actuated electrical switches with an integral temperature sensing element.

1. True
2. False

3-15. At what temperature will the outboard leading edge overheat warning switch open?

1. 205°F
2. 210°F
3. 215°F
4. 220°F

3-16. Where is the rotary selector switch located?

1. Bleed-air coated panel
2. Leading edge caution panel
3. Ice control panel box
4. Ice control protection panel

3-17. What total number of duct overheat thermal switches are installed in the P-3C aircraft?

1. Three
2. Six
3. Nine
4. Twelve

3-18. What will cause the OPEN light on the ice control protection panel to illuminate?

1. Failure of system components
2. When the air-conditioning valve is open
3. When the bleed-air valve opens more than 2 degrees
4. When the modulating valve opens more than 2 degrees

3-19. Either one or both fuselage bleed-air shutoff valves must be open to direct air to the wing anti-icing ducting?

1. True
2. False

3-20. How many modulating valve control switches are located on the left side of the wing and empennage ice panel?

1. One
2. Two
3. Three
4. Four

3-21. What switch(s) on the wing and empennage ice panel controls the outboard modulating valve on the left and right wings?

1. Inboard
2. Outboard
3. Center
4. Both 1 and 2 above

3-22. What switches will open when an overheat is sensed at 175°F and closes at 190°F?

1. Leading edge overheat warning switches
2. Wing overheat warning switches only
3. Fuselage overheat warning switches only
4. Wing and fuselage overheat warning switches

3-23. During normal operation of the de-icing system, two of the four engine bleed-air valves are open to supply bleed-air to the cross-ship manifold?

1. True
2. False

3-24. When should the deicing manifold system be tested for leakage?

1. Before each flight
2. Before each engine turn
3. During each flight
4. Both two and three above

3-25. The involvement of the AME 1 and AMEC in the maintenance of the deicing system normally consists of supervision only.

1. True
2. False

3-26. The A-6 rain-removal system uses bleed-air from what stage of the engine compressor?

1. 12th
2. 13th
3. 14th
4. 15th

3-27. Upon loss of electrical power, the nosewheel well bleed-air shutoff valve will be in what position?

1. Open
2. Closed
3. In the last selected position
4. In the manual position

3-28. What type of power is used to operate the rain-removal pressure-regulator shutoff valve?

1. Hydraulic
2. Pneumatic
3. Electric
4. Manual

3-29. What shutoff valve controls the airflow from the rain-removal system to the windshield?

1. Nosewheel well bleed air
2. Rain-removal pressure regulator
3. Main-engine bleed air
4. Cabin bleed air

3-30. What total number of nozzles are on the A-6 windshield?

1. 22
2. 24
3. 26
4. 28

3-31. What rain-removal system component mixes cool air with hot bleed air?

1. Ejector
2. Plenum
3. Nozzle
4. Coupler

3-32. In what two positions may the nosewheel well bleed-air switch be placed?

1. ON and OFF
2. AUTO and ON
3. AUTO and OFF
4. MANUAL and OFF

3-33. When the windshield switch is placed in the AIR position, through what circuit breaker does the dc voltage flow?

1. Anti-ice
2. Air conditioning
3. Rain-removal
4. Windshield air

3-34. The windshield air caution light illuminates to indicate that the windshield switch is in what position?

1. ON
2. OFF
3. AUTO
4. AIR

3-35. Where is the nosewheel well bleed-air relay mounted for the rain-removal system?

1. Air-conditioning panel
2. Aft bay relay box no. 3
3. Left main landing gear
4. Cockpit center console

3-36. The windshield rain-removal warning relay is a single throw, double pole sealed relay?

1. True
2. False

3-37. What are the three positions of the windshield switch?

1. ON, OFF, AUTO
2. AUTO, MANUAL, OFF
3. AIR, WASH, AUTO
4. WASH, AIR, OFF

3-38. Where is the rain-removal nozzle assembly located?

1. Beneath the pilot's windshield
2. Beneath the b/n's windshield
3. Both 1 and 2 above
4. Inside and under the radome next to the windshield

3-39. What switch controls the rain-removal pressure-regulator shutoff valve?

1. Windshield wash
2. Rain removal
3. Windshield
4. Air conditioning

3-40. The rain-removal system removes rain by directing a flow of heated air across the windscreen. What is the function of this heated air?

1. It blows the water away
2. It drys the windscreen, keeps it dry
3. It breaks the raindrops into small particles
4. It evaporates the raindrops

3-41. The left main landing gear weight-on-wheels switch controls the nosewheel and bleed-air relay?

1. True
2. False

3-42. Under what condition(s) is the left main landing gear weight-on-wheels switch in the closed position?

1. When the strut is compressed
2. When the strut is extended
3. Neither of the above

3-43. What stage of the compressor is the primary source of bleed air for operation of the ECS?

1. 10th
2. 12th
3. 14th
4. 16th

3-44. Which of the following methods is used to (a) control and (b) actuate the bleed-air flow control and shutoff valve?

1. (a) Electric (b) pneumatic
2. (a) Electric (b) electric
3. (a) Pneumatic (b) electric
4. (a) Pneumatic (b) pneumatic

3-45. What air supply source(s) could be used for engine starting and ground operation of the air-conditioning system?

1. Ram air
2. Ground start air
3. APU air
4. Both 2 and 3 above

3-46. Which of the following conditions will cause the bleed-air shutoff valve to close?

1. Overtemperature
2. Overpressure
3. Loss of electrical power
4. All of the above

3-47. When operating the deicing system with one engine secured, what valve must be open to allow bleed air to both sides of the aircraft?

1. Bleed-air shutoff
2. Bleed-air flow control and shutoff
3. Engine bleed-air bypass and shutoff
4. Crossover duct isolation check

3-48. What valve will open because of a sensed pressure drop through the ice screen?

1. Bleed-air shutoff
2. Bleed-air flow control and shutoff
3. Engine bleed-air bypass and shutoff
4. Nonice and low-limit control

3-49. What do the lights for the bleed-air shutoff valves indicate?

1. Switch position
2. Valve position
3. Both 1 and 2 above
4. High temperature

3-50. In the event of a rupture in the left or right manifold, what valve will prevent overbleeding of the engines?

1. Bleed-air shutoff
2. 10th-stage check
3. High-stage check
4. Crossover duct isolation check

3-51. What is the total number of basic components in the refrigeration subsystem?

1. 7
2. 8
3. 9
4. 10

3-52. What component, if any, is used to check the oil level in the cooling turbine?

1. Dip stick
2. Pressure gauge
3. Siqht gauge
4. None

3-53. Which of the following conditions will cause the temperature indicator probe in the fan inlet to trip?

1. Obstruction of the ram-air inlet duct
2. Collapse of the ram-air inlet duct
3. Temperature above 440°F
4. All of the above

3-54. What component allows air to pass through the water separator if ice has accumulated in the coalescer bag?

1. Water separator ice screen
2. Coalescer cone
3. Swirl vanes
4. Water separate bypass valve

3-54. What name is given to the air used to cool the sonobuoy and weapons bays?

1. Refrigerated
2. Partially cooled
3. Cabin exhaust
4. Ram

3-56. What component prevents ram air from flooding the cabin when the aircraft is flying at high speeds?

1. Outflow valve
2. Cabin pressure regulator
3. Cabin air temperature control
4. Ram-air shutoff valve

3-57. When the air-conditioning switch is OFF, the AUX vent switch is ON, and the ram-air pressure does not meet cabin exhaust fan requirements, what valve will open?

1. Ram-air shutoff
2. Water separator bypass
3. Cabin outflow
4. Negative pressure relief

3-58. The torque motor in the cabin temperature control modulating valve converts electrical signals to what type signals?

1. Pneumatic
2. Mechanical
3. Magnetic
4. Hydraulic

3-59. What component provides the controlling signal for the cabin temperature control valve?

1. Cabin air thermistors
2. Cabin air sensor
3. Cabin air temperature control
4. Cabin air high-temperature thermostat

3-60. The opening of the cabin air high-temperature limit thermostat internal valve causes what valve(s) to close?

1. Cabin temperature control valve
2. Nonice and low-limit control valve
3. Both 1 and 2 above
4. Bleed-air flow control and shutoff valve

3-61. The cabin temperature control sensor is designed to control the cabin temperature within what number of degrees of the selected temperature?

1. ±3
2. ±7
3. ±10
4. ±ll

3-62. In the ram-air augmentation mode, the ram-air shutoff valve regulates downstream pressure to what fixed differential above cabin pressure?

1. 7.5±2
2. 5.5±1
3. 3.0±.5
4. 4.0±l

3-63. During manual operation, what switch is used to position the ram-air shutoff valve?

1. Cabin pressurization
2. Air-conditioning
3. Auxiliary vent
4. Temperature select

3-64. When the air conditioning automatically shuts down and the ram-air shutoff valve is fully open, what action, if any, must be taken to restore normal operation?

1. Secure the AUX VENT switch
2. Turn the air-conditioning switch to OFF and then to ON
3. Turn the air-conditioning switch to OFF, then to RESET, and then to ON
4. None

3-65. What valve is controlled by the aux vent switch?

1. Cabin temperature modulating valve
2. Ram-air valve
3. Aux-vent valve
4. Cabin-outflow valve

3-66. What is the function of the environmental control panel?

1. To control temperature
2. To control pressurization
3. To control anti-icing function
4. All the above

3-67. The ground-aircheck valve is a split-flapper valve which is spring-loaded to the open position until engine start-up.

1. True
2. False

3-68. What component(s) interconnect with the ram-air high and low-temperature limit switch circuitry?

1. Auxiliary vent switch
2. Bleed-air flow control valve and ram-air shutoff switch
3. Both 1 and 2 above
4. Aux bent valve and aux vent switch

3-69. With the cabin air temperature selector in the automatic mode within what temperature range can the cabin temperature be selected?

1. 70°F to 90°F
2. 60°F to 80°F
3. 65°F to 85°F
4. 75°F to 95°F

3-70. What is the temperature limit on the cabin temperature control valve while in the automatic mode?

1. 160°±5°F
2. 160°±15°F
3. 185°±5°F
4. 185°±15°F

3-71. Icing of the water separator will only occur at low altitudes where mass airflow and temperature are relatively high.

1. True
2. False

3-72. What component in the refrigeration pack low-limit control senses duct air temperature and compares it with an internally generated reference?

1. Pneumatic pickups
2. Inlet air sensor
3. Thermistor
4. Temperature limit thermostat

3-73. What are the two physically separated packages of the refrigeration subsystem?

1. Refrigeration and air conditioning
2. Heating and air conditioning
3. Refrigeration and cabin air/water separator
4. Air conditioning and pressurization

3-74. Water vapor condenses as ice crystals when the turbine discharge air drops below what maximum temperature

1. 0°F
2. 15°F
3. 32°F
4. 40°F

3-75. In the bleed-air system, what component senses the bleed-air pressure in the duct upstream from the bleed-air flow control and shutoff valve?

1. Overtemperature pressure sensor
2. Temperature control orifice
3. Temperature sensor
4. Pressure transmitter

ASSIGNMENT 4

Textbook Assignment: "Navy Aircrew Common Ejection Seat (NACES)," chapter 5, pages 5-1 through 5-38.

4-1. What configuration is used in the NACES system to meet the exact requirements of the crew station designer?

1. Reversible
2. Flexible
3. Standard
4. State-of-the-art

4-2. What does the acronym NACES mean?

1. Navy Aircraft Ejection Seat
2. Navy Aircrew Common Ejection Seat
3. Naval Aircrew Escape System
4. Naval Automatic Control Escape System

4-3. What type ejection seat is used in the F/A-18C aircraft?

1. SJU-17(V) 1/A
2. SJU-17(V) 2/A
3. SJU-17(V) 3/A
4. SJU-17(V) 4/A

4-4. The NACES may be used in either the F/A-18C/D, F-14A or A-6E aircraft?

1. True
2. False

4-5. Who is responsible for removing and installing the ejection control handle safety pin prior to and after flight?

1. Plane captain only
2. Aircrew only
3. Plane captain prior to and aircrew after
4. Aircrew prior to and plane captain after

4-6. The SJU-17(V)1/A ejection seat provides escape capabilities within which of the following parameters?

1. All altitudes and airspeeds
2. A maximum of 600 knots speed and 50,000 feet altitude
3. Zero altitude and zero airspeed
4. Both 2 and 3 above

4-7. What is the primary purpose of the barostatic release unit?

1. To act as a backup in the event of electronic sequencer failure
2. To release the occupant from the seat
3. To release the personal parachute at a determined altitude
4. To provide automatic operation of the emergency restraint release

4-8. After seat ejection, the seat is stabilized and the forward speed is retarded by what component(s)?

1. Personal parachute
2. Drogue parachute
3. Bridle system
4. Both 2 and 3 above

4-9. What component automatically controls drogue deployment, seat/man separation, and parachute deployment after ejection?

1. Barostatic release unit
2. Time release mechanism
3. Drogue/bridle release system
4. Multimode electronic sequencer

4-10. The NACES consists of what total number of main assemblies?

1. Six
2. Five
3. Three
4. Four

4-11. What is the primary purpose of the catapult assembly?

1. To jettison the seat from the aircraft
2. To provide initial power for seat ejection
3. To secure the seat to the aircraft structure
4. Both 2 and 3 above

4-12. The seat bucket assembly consists of the underseat rocket motor, lateral thrust motor, leg restraint snubbers, two pitot assemblies, shoulder harness control lever, and pin puller.

1. True
2. False

4-13. When the ejection seat is installed in the aircraft, what component locks it to the catapult?

1. Upper right main beam
2. Upper left main beam
3. Top latch plunger
4. Barostatic release unit

4-14. What barrels make up the catapult ejection gun?

1. Inner, outer only
2. Inner, intermediate only
3. Intermediate, outer only
4. Inner, intermediate, outer

4-15. What crossbeam takes the full thrust of the catapult during ejection?

1. Top crossbeam
2. Center crossbeam
3. Bottom crossbeam

4-16. What services do the seat bucket slippers provide?

1. Attachment points for the seatbucket to the mainbeam
2. Damping out lateral movement
3. Smooth movement of the seat bucket

4-17. What total number of slippers are attached to the guide rails of the mainbeam assembly?

1. Five
2. Six
3. Three
4. Four

4-18. What handle is located on the left side of the seat bucket?

1. Safe/arm control
2. Seat height adjustment
3. Shoulder harness control
4. Manual override

4-19. What component on the NACES protects the occupant in the event of rapid forward deceleration?

1. Static lanyard
2. Spring loaded withdrawal plunger
3. Shoulder harness reel
4. Shoulder harness strap quadrant

4-20. Which of the following is a characteristic of the PRDM?

1. Has a cylindrical body
2. Has a gas operated secondary cartridge
3. Is a sealed unit
4. Each of the above

4-21. The PRDM primary cartridge is fired by what means?

1. Mechanically
2. Ballistically
3. Electrically
4. Gas

4-22. The PRDM can be initiated by which of the following means?

1. Electronic sequencer
2. Manual override system
3. Restraint release unit
4. Each of the above

4-23. The parachute withdrawal line is attached to the PDRM by what means?

1. By scissor mechanism
2. By a bolt and lock nut
3. By a sliding stirrup
4. By a spring-loaded quick release pin

4-24. The electronic sequencer is mounted on the NACES at what point?

1. Across the mainbeam assembly behind the seat bucket
2. Across the mainbeam assembly above the main parachute
3. Across the mainbeam assembly below the main parachute
4. Across the mainbeam assembly's lower aft end

4-25. Upon activation, the electronic sequencer determines the mode of ejection and supplies power to the start switches?

1. True
2. False

4-26. Which of the following is a function of the barostatic release unit impulse cartridge?

1. Provides the necessary gas for the restraint release assembly
2. Provides the necessary gas pressure to retract the capsule peg
3. Provides the necessary gas to prevent mechanical initiation

4-27. What component of the barostat assembly prevents the delay mechanism from operating at altitudes in excess of barostat ratings?

1. Quick release pin
2. Bellows device unit
3. Peg engagement mechanism
4. Diaphragm assembly

4-28. What action or component supplies the power source to fire the drogue deployment catapult cartridge?

1. Retraction of the capsule peg
2. Gas pressure from the primary initiators
3. The delay mechanism firing pin
4. The electrical inputs from the electronic sequencer

4-29. What is the primary function of the drogue deployment catapult?

1. To stabilize the ejection seat
2. To rapidly deploy the drogue and bridle assembly
3. To prevent parachute entanglement
4. To ensure a rapid escape from the ejection seat

4-30. Which of the following is a characteristic of the drogue deployment catapult assembly?

1. Contains a two-piece telescope piston
2. Contains an enlarged upper end
3. Is fitted with a drogue and canister
4. Each of the above

4-31. The drogue deployment catapult is mounted in what location on the ejection seat?

1. Aft RH aide of the seat structure
2. Aft LH side of the upper cross beam
3. Outboard of the LH lower cross beam
4. Outboard of the RH main beam

4-32. What size drogue chute is used in the NACES?

1. 1.45 mm
2. 2.10 mm
3. 2.50 mm
4. 8.25 mm

4-33. During the ejection sequence, what component(s) supplies the gas pressure to operate the barostatic release unit delay mechanism?

1. Primary initiators
2. Multipurpose initiators
3. Start switch assemblies
4. Electronic sequencer

4-34. Which of the following components houses the start switches?

1. Multipurpose initiator
2. Static lanyard assembly
3. Electronic sequencer

4-35. During ejection, the start switches provides what action?

1. Battery power
2. Initiation set-up
3. Start signal to the electronic sequencer
4. Time-delay start time

4-36. What is the primary purpose of the pitot assemblies?

1. To supply pressure to the start switches for ejection
2. To supply dynamic pressure inputs to the electronic sequencer
3. To supply static base pressure to the electronic sequencer

4-37. Which of the following components receives gas pressure from the upper face of the RH ballistic manifold?

1. Shoulder harness reel
2. Parachute deployment rocket motor
3. Upper drogue bridle release
4. Each of the above

4-38. What total number of ballistic manifolds is/are installed on the NACES seat?

1. One
2. Two
3. Three
4. Four

4-39. What item or action secures the pitot arms in the stowed or deployed positions?

1. Release piston
2. Locking plunger
3. Quick release pin
4. Static gas pressure

4-40. What total number of connectors is/are present on the upper face of the LH ballistic manifold?

1. One
2. Two
3. Three
4. Four

4-41. What is the primary purpose of the thermal batteries?

1. To supply power for seat operation
2. To supply backup power for sequencer operation
3. To supply initial power for sequencer operation
4. To supply initial power for the seawars

4-42. Thermal batteries are mounted in each of the main beam assemblies?

1. True
2. False

4-43. What total number of propellant tubes make up the underseat rocket motor?

1. Ten
2. Thirteen
3. Fifteen
4. Seventeen

4-44. What is the purpose of the lateral thrust motor?

1. Serves the same purpose as the underseat rocket motor
2. To provide additional boost to underseat rocket motor
3. Permits a divergent trajectory to the ejected seat

4-45. When the safe/arm handle is in the safe position, the pilot sees the handle as what color(s)?

1. Yellow
2. Black and yellow
3. White
4. Red

4-46. What total number of connectors are on the lower face of the RH ballistic manifold assembly?

1. Five
2. Two
3. Three
4. Four

4-47. Forward movement of the leg restraints is prevented by what component?

1. Seat bucket snubbers
2. Leg restraint locks
3. Leg restraint snubbers
4. Leg restraint control lever

4-48. What component restricts the operation of the manual override handle when the seat is installed in the aircraft?

1. Safety pin
2. Thumb button
3. Pin puller
4. Safe/arm handle

4-49. Operation of the manual override handle simultaneously operates the safe/armed handle to the safe position?

1. True
2. False

4-50. During ejection, what component(s) provides the gas pressure to operate the pin puller?

1. The right hand seat initiator only
2. The left hand seat initiator only
3. Both 1 and 2 above

4-51. Which of the following component(s) are part of the lower harness release mechanism?

1. Leg restraint line locks
2. Negative-g strap locks
3. Lower harness locks
4. Each of the above

4-52. The parachute container houses which of the following parachute?

1. Controller drogue
2. Main drogue
3. Personnel and ribbon drogue

4-53. In the NACES, what type drogue is attached to the parachute crown bridle apex?

1. 1.5m main
2. 1.5m personnel
3. 1.5m ribbon
4. 1.5m controller

4-54. What force actuates the firing pin in the catapult firing mechanism?

1. Ballistic gas
2. Mechanical
3. Electrical inputs

4-55. What maximum number of inches of travel is required before the piston head shears the three dowel screws in the guide bushing?

1. 38
2. 42
3. 60
4. 72

4-56. During ejection sequence, gas pressure from what cartridge is used to operate the shoulder harness release cartridge?

1. Multipurpose initiator
2. Shoulder harness impulse cartridge
3. Left hand seat initiator
4. Right hand seat initiator

4-57. Which of the following forces causes the secondary cartridge to face fire the parachute deployment rocket motor in the event of sequencer failure?

1. Ballistic gas from the harness release unit cartridge
2. Ballistic gas from the emergency restraint release cartridge
3. Both 1 and 2 above
4. Ballistic gas from the multi-purpose initiator cartridge

4-58. After ejection has been initiated, what source supplies the electronic sequencer with electrical power?

1. A single on-board thermal battery
2. Two on-board thermal batteries
3. Internal aircraft power
4. Start switches

4-59. What source activates the multipurpose initiators upon ejection?

1. Ballistic gas pressure from primary initiators
2. Ballistic gas pressure from thermal batteries
3. Two pyrotechnic cartridges, after 42 inches of travel
4. Electronic sequencer, 120 milliseconds after activation

4-60. In the absence of a start switch signal, the electronic sequencer takes what action?

1. It continues in the “wait” mode
2. It activates automatically after approximately 200 milliseconds
3. It initiates the underseat rocket motor
4. It activates the start switch

4-61. What is the total burn time of the underseat rocket motor?

1. 200 milliseconds
2. 220 milliseconds
3. 250 milliseconds
4. 2 seconds

4-62. Which of the following is/are the critical actions for an electronic sequencer?

1. Sensing the seats altitude and airspeed
2. Choosing the appropriate timings from a set of available sequences
3. Both 1 and 2 above
4. Providing initial start-up from the thermal batteries

4-63. Speed and altitude are measured from the sequencer by what three types of sensors?

1. Pitot pressure, altitude, airspeed
2. Pitot pressure, altitude, base pressure,
3. Pitot pressure, base pressure, accelerometer
4. Altitude, airspeed, attitude

4-64. What total number of shielded cables are used to transmit electrical signals to and from the electronic sequencer?

1. Six
2. Seven
3. Eight
4. Nine

4-65. What is the total number of operational ejection modes of the NACES?

1. Five
2. Seven
3. Three
4. Nine

IN COMPLETING ITEMS 4-66 THROUGH 4-70, SELECT FROM COLUMN B THE AIRSPEED AND ALTITUDE INFORMATION THAT APPLIES TO THE MODE OF OPERATION IN COLUMN A. ITEMS IN COLUMN B MAY BE USED MORE THAN ONCE.

	A. Modes	B. Airspeeds/ Altitudes
4-66.	Mode 1	1. Airspeed above 500 knots and altitude below 8,000 feet
4-67.	Mode 2	
4-68.	Mode 3	2. Altitude above 18,000 feet
4-69.	Mode 4	
4-70.	Mode 5	3. Altitude between 8,000 and 18,000 feet
		4. Airspeed below 350 knots and altitude below 8,000 feet

4-71. During the ejection sequence, the PDRM fires and withdraws the parachute in its bag.

1. True
2. False

4-72. During ejection and shortly after the parachute starts to deploy, what parachute part is jettisoned to avoid entanglement and allow a clean seat/man separation?

1. Parachute extractor
2. Drogue bridle
3. Drogue chute
4. Stabilizer chute

4-73. What seat survival kit is used with the NACES?

1. SKU-7/A
2. SKU-8/A
3. RSSK-7
4. RSSK-8

4-74. At what time during ejection will electronic sequencer timing begin?

1. When the ejection control handle is pulled
2. After approximately five inches of seat upward travel
3. Immediately after seat ejection
4. When the start switches close

4-75. What NAVAIR manual should be used to order repairable/nonrepairable parts for the NACES?

1. A1-F18AE-44
2. 01-F18AE-4-1
3. 01-13-1-36
4. 13-1-36

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